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CLAIMS

1. An apparatus for cutting and nibbling sheet metal elements in coil form, said apparatus comprising pulling devices for pulling said sheet metal elements, which are delivered from a coil or bobbin and are driven by a pair of overlapped rollers (1) and (2), (1') and (2') and (1'') and (2''), said sheet metal element being adapted to be intermittently moved, stopped and moved backward, said sheet metal element being machined by a machining head (15) and (16) which are arranged above and under said sheet metal element and can be transversely driven with respect to the feeding direction of said sheet metal element, characterized in that said apparatus (10) further comprises a plurality of offset rollers performing a series of folding and counter-folding operations for providing said sheet metal element in a perfectly flat condition, and that said machining heads are driven parallel to said beams and transversely of the sheet metal element feeding direction.

2. An apparatus, according to claim 1, characterized in that said sheet metal element is continuously fed, with intermittent feeding steps,

stopping steps and backward moving steps.

3. An apparatus, according to claims 1 and 2, characterized in that said apparatus further comprises beams (11) and (12) supporting cross guide elements (13) and (14), parallel to said beams, and in turn supporting said movable machining heads (15) and (16).

4. An apparatus, according to one or more of the preceding claims, characterized in that said machining heads (15) and (16) can rotate about a machining axis which in turn can be transversely driven.

5. An apparatus, according to one or more of the preceding claims, characterized in that said machining heads (15) and (16) comprise a plurality of circularly arranged punch elements (36) cooperating with corresponding die elements applied to said bottom head (16).

6. An apparatus, according to one or more of the preceding claims, characterized in that said machining heads (15) and (16) are rotatively driven by brushless motors (17) and (18).

7. An apparatus, according to one or more of the preceding claims, characterized in that said

apparatus further comprises a geared motor unit (19), said geared motor unit (19) having a shaft (19') supporting a toothed pulley (20) entraining a toothed belt (21).

8. An apparatus, according to one or more of the preceding claims, characterized in that said toothed belt rotatively drives a second toothed pulley (22), keyed on a supporting shaft (23).

9. An apparatus, according to one or more of the preceding claims, characterized in that said shaft (23) longitudinally drives said sheet metal element, by driving the driving roller pair (1), (2) the rollers of which are coupled with the other pairs (1'), (2') and (1''), (2'') of feeding and driving rollers.

10. An apparatus, according to one or more of the preceding claims, characterized in that said apparatus comprises a brushless motor assembly (25) having a toothed pulley (26) which entrains a toothed belt (27) in turn rotatively driving a toothed pulley (28) keyed on a worm screw (29).

11. An apparatus, according to one or more of the preceding claims, characterized in that said worm screw (29) engages with a scroll element (30)

which operatively drives a top punch bearing head (15) so as to cause said head (15) to be translated along its guide elements (13).

12. An apparatus, according to one or more of the preceding claims, characterized in that said screw (29) cooperates with a second scroll element (31) which operatively drives said die bearing bottom head (16).

13. An apparatus, according to one or more of the preceding claims, characterized in that said apparatus further comprises a hydraulic cylinder (32) which vertically drives a wing (33) having, at a bottom portion thereof, an eccentric lug (34), and selectively pressing a radially arranged punch against a corresponding die element therefor.

14. An apparatus, according to one or more of the preceding claims, characterized in that said wing element (33) can freely rotate, as rotatively driven by said machining head (15).

15. An apparatus, according to one or more of the preceding claims, characterized in that said wing element (33) as it is lowered, engages said eccentric lug (34) in a cavity corresponding to a punch element (36) to be operated.

16. An apparatus, according to one or more of the preceding claims, characterized in that said wing element (33) and the eccentric lug (34) thereof, engaging with a said punch element (36) are rotatively driven by the rotary movement of a said machining head.

17. An apparatus, according to one or more of the preceding claims, characterized in that the movements of said metal sheet element and said machining heads are controlled and timed by a numeric controlling center unit.